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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/764,634	01/18/2001	Gunter Schwab	SCHWAB ET AL 3	8133

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EXAMINER

TRAN, BINH X

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

Office Action Summary

Application No.

09/764,634

Applicant(s)

SCHWAB ET AL.

Examiner

Binh X Tran

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1,2,4,5,7 and 9 is/are allowed.
- 6) ☐ Claim(s) 3,6 and 8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 01182001
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Huh et al. (US 6,632,976) in view of Rose et al. (US 5,967,156) and further in view of Haq (US 6,245,677).

Huh discloses a method comprising the step of: flowing an etching in a laminar flow along a direction of flow toward the edge of the semiconductor wafer (7) at a predetermined angle (col. 3 line 20 to col. 4 line 14). Huh does not explicitly disclose the specific angle of the semiconductor wafer with respect to the flow direction of the etching medium. However, Huh clearly discloses that the angle is a predetermined angle so that the particles present on the wafer surface are easily removed (col. 3 line 35-38).

In a semiconductor method, Rose discloses the step of inclining the wafer with respect to the flow of the etching medium so that there is an angle of less than 180 ° between the flow direction of the etching medium and the first side of the wafer and an angle of greater than 180 ° between the flow direction of etching medium and the second side (i.e. backside) (Fig 1). It would have been obvious to one having ordinary

Art Unit: 1765

skill in the art, at the time of invention, to modify Huh in view of Rose by using one angle less than 180° and the other angle greater than 180° because this will enhance that particle removal process.

Rose discloses the polishing step (Fig 3). However, Rose fails to explicitly disclose that the polishing step is performed on the second side or backside of the wafer. Haq teaches the step of polishing the backside of the wafer (Fig 1, step 4). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Huh and Rose in view of Haq by polishing the second side of the wafer because this will create a smooth surface on the back side.

Claim 8 differs from the cited prior art by the specific angle between the flow direction of the etching medium and the wafer. However, Rose teaches that the angle between the flow direction of the etching medium and the wafer. The result effective variable is commonly determined by routine experiment. The process of conducting routine experiments so as to produce an expected result is obvious to one of ordinary skill in the art. Hence, it would have been obvious to one having ordinary skill in the art, at the time of invention, to perform routine experiment to obtain a specific angle an expected result

3. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Huh et al. (US 6,632,976) in view of Rose et al. (US 5,967,156), Haq (US 6,245,677) and further in view of in of Guldi et al. (US 5,698,040).

Huh, Rose and Haq fail to teach rotating the wafer during etching. Guldi teaches to rotate the wafer during etching to enhance the etching process. It would have been

Art Unit: 1765

obvious to one having ordinary skill in the art, at the time of invention, to rotate the wafer during etching because it will enhance the etching process.

Allowable Subject Matter

4. Claims 1-2, 4-5, 7, 9 are allowed.
5. The following is a statement of reasons for the indication of allowable subject matter: The cited prior arts fail to disclose or suggest the step of placing a protective shield in front of the edge of the semiconductor wafer to cause the etching medium flow firstly onto the protective shield and not onto the edge of the semiconductor wafer, and then causing the etching medium to have a laminar flow across the wafer surface.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X Tran whose telephone number is (703) 308-1867. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine G Norton can be reached on (703) 305-2667. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Binh X. Tran

NADINE G NORTON
PRIMARY EXAMINER

